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Business Statistics. Edited by MELVIN T. COPELAND, Cambridge, Mass.: Harvard University Press, 1917. \$3.75.

This book is the third volume of the Harvard Business Studies. It was "prepared to bring together, in a form accessible for class use, scattered articles and selections upon the subject of business statistics." It is "designed primarily for the purpose of instruction in the course in Business Statistics in the Harvard Graduate School of Business Administration." It does "not pretend to cover the entire field of business statistics, but deals chiefly with statistics used in mercantile and manufacturing businesses."

The book is designed for advanced students who presumably have had training in statistical method. The function of a course in business statistics then would seem to be to give the business student a pretty definite conception of the scope of business statistics, to make him acquainted with the best types of original forms and records that business has developed, the quantitative units in use, methods of standardization of records and units, sources of data, and the essential problems of management. In addition, such a course should give thorough training in the practical application of sound statistical methods to the gathering of data, its analysis, and the interpretation and presentation of results in the simplest manner possible. How well does *Business Statistics* meet this program? It professes to be "only a beginning of the development of this subject," yet certain things may be expected of it.

In the first place there is no close definition of the field of business statistics. The editor gives his conception of the field of business statistics in the Preface, where business statistics are defined as "numerical statements of facts, exclusive of financial accounts, which are used in business administration." The reader is at the same time reminded that statistics "deal with aggregates as masses which are sufficiently large to reveal types of standards even if individual units show wide variation."

There are two classes of business statistics, (1) external, (2) internal. External statistics indicate market conditions and general tendencies in business. Internal statistics pertain to the processes and operation of the business unit itself. The needs of business administration are the controlling factors in the choice and analysis of the data available. There is no attempt made to distinguish between the field of accounting and the field of business statistics, nor between the field of economic statistics and the field of business statistics.

The book is divided into five chapters. The first two chapters, comprising about one-fourth of the book, are devoted to statistical

methods and statistical indexes of business conditions. With the exception of one or two the selections here are the best available. The making of questionnaires, the general types of statistical units, the use of index numbers, the theories of business cycles, and the sources of information of business statistics of the external type are well treated. The methods of tabulation are very inadequately treated and for methods of presenting data in graphical form the student is referred to special treatises. In view of the large use and possibilities of graphical presentation in actual business one cannot help feeling that at least a considerable effort should have been made to show the large place graphs should occupy.

The author reprints his own article on statistical indexes of business conditions from the *Quarterly Journal of Economics* (XXIX, 522-62). The recent work of Persons of Harvard University and Clark of the University of West Virginia shows the methods used by Copeland quite inadequate. Much further investigation along this line needs to be made before we shall have adequate indexes of business conditions.

The third, fourth, and fifth chapters deal with sales and advertising statistics, factory statistics, and statistics for the chief executive, respectively. How largely *Printer's Ink* and *System* are drawn upon is shown by the fact that of fifty-nine selections in the foregoing three chapters, twenty-eight are taken from these publications.

The selections of the last three chapters give an impression of the importance of the use of statistics in business, a description of many of the original forms and records used in business, and a statement of the essential problems of management. The selections used are the best available and are arranged in logical sequence. However, the actual forms, tables, and graphs for the most part have been omitted in the reprint of the selections. Here is a defect of no small account, for the collector and tabulator of business statistics cannot have too thorough acquaintance with the best forms and records that business has developed. Since the book is professedly a beginning, would it not have been better to try to cover fewer topics and present these more adequately?

There is scarcely anything in the way of defining concrete statistical units for business statistics. The discussion of statistical averages in the part on method finds little application in following chapters. Very little space is devoted to coupling statistical method to the problems presented. One feels that the chapters on method are practically unrelated to the chapters that follow. The fact that the book is a collection of essays on different phases of business makes a systematic, close-knit treatment almost impossible, no matter how great care the

editor may take in choosing his material. The editor's introductions to the different chapters are excellent.

Business Statistics is a pioneer in a rapidly developing field. With all its shortcomings, it is a timely volume in view of the present movement for efficiency emphasized by the war. To call attention to the field of business statistics, to present its main outlines, and to state many of its essential problems are indeed long steps forward. The requirements of administration of large business units and the increasing growth of public direction and control make business statistics more and more a necessity. One wonders whether the development of the science can meet the increasing practical demands on it in view of the industrial development that will surely take place after the coming of peace.

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An Introduction to Statistical Methods. By HORACE SECRIST, PH.D.
New York: Macmillan, 1917. Pp. xxii+482.

Professor Secrist's book represents a determined, and on the whole a successful, effort to present in a clear and practical manner the essentials of statistical method, as opposed to its refinements. While many features of the book present what must appear to the scientific student as crudities and lacunae, it gives to those who make and use statistics in social and business problems the most that they really need, and in readily comprehensible form. The strong point of the treatment is its concrete and practical character, especially its handling of actual procedure and emphasis on the nature of sources of information, and its selection and clear presentation of fundamentals. There is little doubt that subtleties of method, especially the greater portion of the mathematical manipulation through which crude social data are often forced, are not only useless and repellent to the average mind but misleading and pernicious as well. Professor Secrist's presentation is well calculated to implant in the reader's mind a common-sense view of the subject, a critical attitude toward data, and a wholesome appreciation of the limitations of ostensibly precise statements in figures.

The plan of the work includes three introductory chapters on the meaning and application of statistics, sources and collection of data, and units of measurement. Then follows an illustrative chapter describing a model wage investigation, then three chapters on presentation, tabular, diagrammatic and graphical, a chapter on averages, two on index num-